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ABSTRACT

This study explored asynchronous delivery modalities in a distance education program and investigated a paradigm for enhancing interactivity in distance education using CD-ROM, interactive video, and e-mail. The purposes of the investigation were to: (1) create an asynchronous distance learning environment based in these technologies; (2) build into the program multiple interactive prompts (readiness, conditional, non-linear branching, consequential, and reflective) and delivery techniques (interactive video, textual, and graphic); and (3) evaluate both accessibility and program impact upon student learning and attitudes. A combination of computer programs, CD-ROM, videotapes, and e-mail served as the delivery mechanism for a graduate level course on secondary school curriculum. Due to various computer problems, not all students were online at the beginning of the course. Although they could use the post office to mail their projects to the instructor until they obtained the necessary hardware, some did not take the initiative to do that. Hence, a major problem of this type of distribution mechanism is evident in that it requires personal motivation to complete the course. Most of the students found the course to be successful. (AEF)

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A Paradigm for Enhancing Course Offerings Using CD-ROM, Interactive Video and E-mail

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Introduction

Competition for and recruitment of students in higher education have spawned the development of distance education programs. Institutions, more than ever, are seeking ways to attract learners into time- and cost-effective programs. Multiple delivery mechanisms have subsequently evolved: interactive television, computer based programs via CD-ROM, laserdisks, floppy disks, Internet and computer based compressed video. Selection of the delivery mechanism is generally the instructor's choice. Interactive television and computer based video generally involve synchronous communications and interactions. Instructional techniques tend to be "live," more formalized and teacher directed.

Other modalities are asynchronous. In asynchronous communications, the instructor and the learners interact, but not necessarily in "real time." The learner subsequently has complete choice with respect to when he or she desires to study. Asynchronous delivery mechanisms may involve CD-ROM, laserdisks, interactive video floppy disks, Internet or other computer based, non-real time technologies.

If instruction can be provided at times that are convenient to students, then larger enrollments may be predicted. However, the immediate inaccessibility of the instructor provided impetus for charges relative to lack of quality, Hollywood hype, lack of control, and mass production of learning.

Purpose

The purpose of this study is to describe the results of a year-long effort to explore asynchronous delivery modalities in a distance education program. The study investigates a paradigm for enhancing interactivity in distance education using CD-ROM, interactive video and e-mail. The purposes of the investigation were to (a) create an asynchronous CD-ROM, interactive video and e-mail based distance learning environment, (b) build into the program multiple interactive prompts (readiness, conditional, non-linear branching, consequential, and reflective) and delivery techniques (interactive video, textual, and graphical), and (c) evaluate both accessibility and program impact upon student learning and attitudes. As the sophistication of distance education technologies develops, program designers will be required to evaluate their products and efforts in ways not unlike how instruction is evaluated in classrooms all over the globe. This work is directed at extending this conversation.

Discussion on Interactivity

This study is a continuation of previous exploration on computer-based interactivity by the authors. A subsequent study examined the effect of interactivity on student achievement and affective perceptions and discovered that when delivery modality was controlled, no differences in pupil achievement or affective perceptions were obtained. This finding was judged "curious" and potentially flawed, however subsequent investigations reinforced the finding. One hypothesis for the findings suggested that not all prompts are equal; some interactive approaches may be more effective than others. This finding eventually led to a paradigm for computer-based interactivity that involved four types of prompts that were defined as follows:

Readiness Prompt – a prompt in which the user simply decides whether or not to continue in the program.

Conditional Prompt – a prompt in which continuation in the program is contingent upon successful completion of previous assignments.

Non-Linear Prompts - a prompt in which the user simply chooses from among multiple alternatives which topic he or she desires to pursue.

Consequential Choice - a prompt for which the selection has consequences (the patient dies, the bow runs out of arrows, etc.)

Reflective - a prompt involving written reflection or thinking about a topic or event.

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The expectation of the researchers was that programs involving these prompts would entail different learning and different attitudes on the part of students.

Overview

A combination of computer programs, CD-ROM, videotapes and e-mail served as the delivery mechanism for this graduate level Secondary School Curriculum course. During the only meeting on campus, students were introduced to a new method of instruction at Indiana State University. Logistics and methodology were discussed and students were given a computer program consisting of both the course content and instructional methodology. Briefly, content consisted of reading, responding, and interacting with (1) Goals 2000, (2) textbooks, (3) projects selected from over fifty current trends in the education field, and (4) responding to social behaviorist, experientialist and traditional philosophies viewed via interactive video with "attacks" disseminated to other class members on a distribution list, (5) other course requirements. Fifteen assignments in all were required. Responses were e-mailed to the instructor for evaluation and comments. For one out of twenty-five students not having e-mail, content was submitted via floppy disk. Distribution lists were sent to the class members to react with one another on their various stands on law cases, etc.

Instructor Goals For Participants

1. To enable students to become proficient in curriculum planning, its foundations, types, forces, processes, evaluation, criticism, latest trends, decision making and future direction.

2. To enroll students who would not otherwise partake of course offerings by improving accessibility; e.g., non-traditional students.

3. To apply curriculum content, its design, implementation and evaluation into the student's own teaching-learning situation and to become aware of curricular issues and criticism and be able to formulate a response to them.

4. To provide quality instruction through the latest technologies.

5. To improve cost effectiveness by reaching more students at a lower expenditure.

6. To impact students with the application and direct utilization of computers, networking and e-mail to conduct learning activities.

7. To acquaint students with the role of technology in the curriculum and the integration of media into the teaching-learning process.

8. To allow flexibility of time management by studying at home in student's controlled environment.

9. To enable students to become more responsible as an active participant in curriculum development by becoming knowledgeable of the patterns and processes of effective curricular change.

Delivery Mechanisms

CD-ROM and interactive video provide considerable capability for asynchronous course delivery. This program involved instruction that was also based upon graphic, and textual materials. Learners were asked to receive instruction in the prescribed way and respond via e-mail to other class members and the instructor. CD-ROM was used to take advantage of the power and speed of software independent of Internet; also, it is a medium for which we have property rights and will not be widely distributed.

Results

Of the four projects required as of this date (six weeks into the semester), completions stand as follows for the 25 students enrolled:

Project 1: 1 incomplete - 96% completion rate
Project 2: 0 incomplete - 100% completion rate
Project 3: 4 incomplete - 84% completion rate
Project 4: 5 incomplete - 80% completion rate

A few people have completed projects ahead of the due dates including one person who has only one assignment remaining for completion of the course. He should have all requirements in before the mid-point of the semester.

Analysis of Results and Problems

Due to various computer problems, not all students were online at the beginning of the course. Although they could use the post office to mail their projects to the instructor until they obtained the necessary hardware, some did not take the initiative to do that. Hence a major problem of this type of distribution mechanism is evident in that it requires personal motivation to complete the course. Those who do not have this attitude and desire probably are not life-long learners anyway and would fail in other similar attempts, but for most students in the past two years this has been a very successful venture, for the accolades and phrases have been rewarding for the time and energy put into this type of offering. Of those responding in the past to the course evaluation, the ratings were: A, 64 students; B+, 5 students; B, 5 students. There were no lower grades given to this course, therefore it is deemed a successful venture and will continue to be offered in the future, of course with up-grades to keep the content and methodology current.